

**AMENDMENTS TO THE CLAIMS**

The listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

1. (Currently Amended) An electric field sensor comprising:

a light source;

an electro optic crystal which is applied with an electric field based on a signal under test, in which a birefringent index changes according to the electric field, and which changes a polarization state of light incident from said light source according to the birefringent index and emits the light;

a detector that detects an electric signal according to the change of the polarization state of the light emitted from said electro optic crystal;

a first electrode that is provided close to said electro optic crystal, and that applies the electric field based on the signal under test to said electro optic crystal;

a second electrode that is provided close to said electro optic crystal, thereby forming a pair with said first electrode; and

an auxiliary electrode that is electrically connected to said second electrode,

wherein a first capacitance between said auxiliary electrode and a ground is larger than a second capacitance between said first electrode and said second electrode, the first capacitance and the second capacitance being arranged in series.

2. (Previously Presented) The electric field sensor according to claim 1, wherein a surface area of said auxiliary electrode is larger than each surface area of said first electrode and said second electrode.

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3. (Previously Presented) The electric field sensor according to claim 2, wherein a shape of said auxiliary electrode is any one of a bar shape, a tabular shape, and a spherical shape.

4. (Previously Presented) The electric field sensor according to claim 1, wherein a distance between said auxiliary electrode and said second electrode is larger than a distance between said first electrode and said second electrode.

5. (Previously Presented) The electric field sensor according to claim 1, further comprising distance changing means for changing a distance between said auxiliary electrode and said second electrode by moving said auxiliary electrode.

6. (Previously Presented) The electric field sensor according to claim 5, further comprising control means for controlling said detector to operate when said distance changing means separates said auxiliary electrode from said second electrode by a predetermined distance or more.

7. (Previously Presented) The electric field sensor according to claim 1, wherein said auxiliary electrode is insulated from a circuit that constitutes said detector and a circuit that drives said light source.

8. - 34. (Canceled)